Research News

MBE provides route to carbon-doped HBT epiwafers

HIGH carbon-doped HBT epi wafers have been produced using molecular beam epitaxy (MBE) in a collaborative US research project involving Quantum Epitaxial Designs Inc (QED) of Bethlehem, Pennsylvania, and The Pennsylvania State University.

Funded by a Department of the Air Force contract, the epi wafers have high p-type doping (3.0 x 10^{19} cm^{-3}) that provides unity activation with very little dopant diffusion. QED says that initial results show a DC gain of >100 (with a 5.0 x 10^{19} cm^{-3} doped base) and low hydrogen incorporation. The hydrogen incorporation results are less than the SIMS detection limit of 5.0 x 10^{17} cm^{-3}, even when carbon doping is greater than 1.0 x 10^{20} cm^{-3}.

"Carbon-doped HBT material grown by MBE offers the potential for improved reliability due to reduced hydrogen incorporation, and increased yields due to the inherent uniformity of MBE grown material," says Dr Ken Bacher, QED's research and development engineering manager.

QED offers carbon-doped HBT material on three-inch substrates and is planning to offer material on four-inch substrates as market demand develops.

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Market News

Digital broadcast satellite market to hit US$3.2 billion in 1997

DRAMATIC growth in the global demand for digital direct broadcast satellite (DBS) is expected to see the market for set top boxes reach US$3.2 billion by the end of 1997.

US market research company, In-Stat, says in 1996 the USA and Canada were the primary markets for digital DBS set top boxes. In 1997, however, the company says many new satellite transmission systems are being launched into space, opening up new DBS markets in Europe, Japan, the Asia Pacific, Latin America, and the Middle East. "As a result of these new launches, the worldwide market for DBS set top boxes will be the start of the digital age of convergence technologies," says Gerry Kaufhold, senior analyst for In-Stat's multimedia service. "The major driving force behind this convergence will be MPEG-2 video and audio compression standards," Kaufhold adds.

After reaching $3.2 billion this year, In-Stat expects the worldwide market for DBS set top boxes to grow more than $4 billion in 1999 and maintain this level in 2000. During 2001, price reductions are expected to reduce revenues to around $3.5 billion.

Kaufhold says that while the dollar value for DBS set top boxes appears to be flat, it is disguising a hidden trend in the market. "Large, expensive dish systems which ship in the hundreds of thousands of units each year are being replaced by small, low-cost dish systems which will ship in millions of units per year," he says.

In-Stat's forecasts are presented in *Worldwide Markets for DBS Set Top Boxes: The Digital Age Arrives Here First!*, a 60-page report priced at priced at $2995.

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News Item

GaAs power amplifier designed for European radios and handsets

A 1.9 GHz GaAs integrated power amplifier is the latest addition to Motorola's line of RF devices.

Motorola says the major features of the device, the 'MRFIC1817', are low negative current requirement (-2 mA max), and guaranteed stability and ruggedness. The company says the use of its planar GaAs MESFET process to produce the device ensures it offers good performance.

The MRFIC1817 integrated power amplifier is designed for Pan European digital 1.0 watt DCS1800/PCS1900 hand held radios operating in the 1.7 to 1. 9 GHz band. It operates at 33.5 dBm typical output power with power gain over 27 dB from a 3.6 volt supply. Motorola says this package gives excellent thermal and electrical performance through a solderable backside contact while allowing the convenience and cost benefits of reflow soldering.

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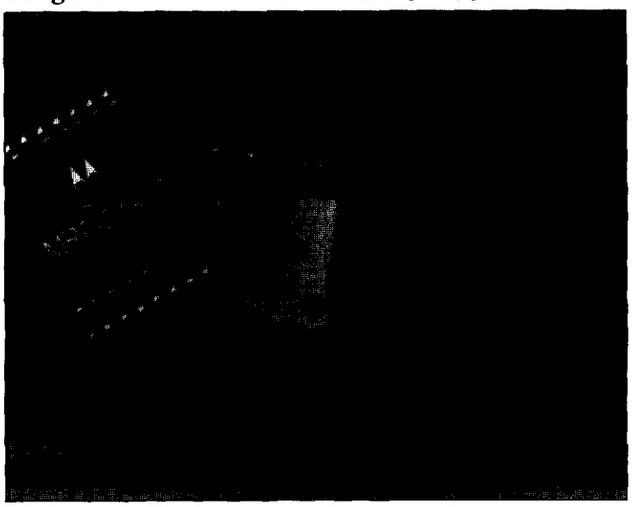

Motorola's 1.9 GHz GaAs integrated power amplifier.